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U.S. Climate Change Science Program – Themes

 Global climate change: a capstone issue for our generation. Major new technology is needed.

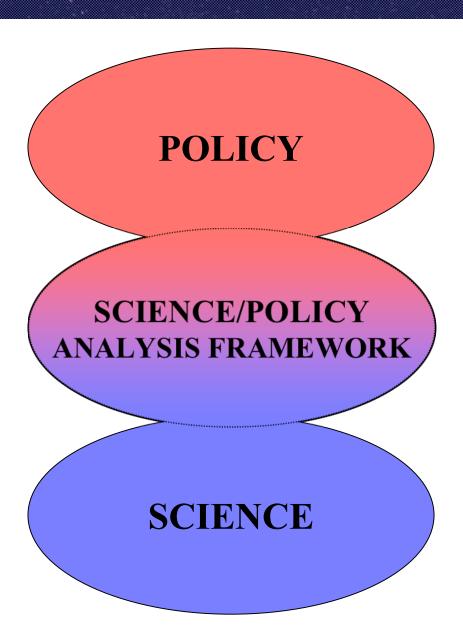
 Accelerate the application of basic climate research to the evaluation of response strategy options



A nation and the global community empowered with the science-based knowledge to manage the risks and opportunities of change in the climate and related environmental systems.



Science-Policy Interface



Climate Science and Technology Management Structure

Office of the President

Climate Change Policy and Program Review by NSC, DPC, NEC

Committee on Climate Change Science and Technology Integration

Chair: Secretary of Commerce* Vice Chair: Secretary of Energy*

Executive Director: OSTP Director

Secretary of State NEC Director Secretary of Transportation

Secretary of Agriculture NASA Administrator Secretary of Defense EPA Administrator Secretary of the Interior CEQ Chairman

OMB Director Secretary of HHS NSF Director

International Activities

(Including Task Force on International Energy Cooperation)

DOS, DOE, USAID and Other Agencies

Interagency Working Group on Climate Change Science and Technology

Chair: Deputy/Under Secretary of Energy*

Vice Chair: Deputy/Under Secretary of Commerce*

Secretary: OSTP Associate Director for Science

Members DS/US Level:

CEQ, DOD, DOI, DOS, DOT, EPA,

HHS, NASA, NEC, NSF, OMB, USDA

Climate Change Science Program

Director: Assistant Secretary of Commerce for Oceans and Atmosphere

Members: DOC, DOD, DOE, DOI, DOS, DOT, EPA, HHS, NASA, NSF, OMB, OSTP, Smithsonian, USAID,

USDA

Climate Change Technology Program

Director: Assistant Secretary of Energy for Energy Efficiency and Renewable Energy Members: DOC, DOD, DOE, DOI, DOS, DOT, EPA, HHS, NASA, NSF, OMB, OSTP, USAID, USDA

*Chair and Vice Chair of Committee and Working Group rotate annually

U.S. Climate Change Science Program – Four part focus



U.S. Climate Change Science Program – Time Line

- Ongoing research and observations
- Updated Strategic Plan, November 2002
- Broad community review of Discussion Draft of Strategic Plan at workshop, December 2002
- Individual comments received on website until January 18, 2003
- First National Research Council (NRC) Report issued, February 25, 2003
- Completion of Strategic Plan, July 2003
- Ongoing implementation and reporting

U.S. Climate Change Science Program – Guidelines

- Question-based strategic plan
- Integration of USGCRP and CCRI
- Combined scientific community and stakeholder review
- Policy relevant and policy neutral standards
- Transparency and comprehensiveness standards
- Reporting of basis and degree of certainty in findings

National Academy Review

- Special committee formed, October 2002
- First meeting held, November 2002
- Committee participated in Workshop
- Committee will review all written comments
- February 2003 Report: Input to final plan
- January 2004 Report: Review of entire process

National Research Council First Report— Compliments

- Builds on well-established USGCRP foundation
- Stresses need for science input to decision making
- Identifies many cutting-edge research activities
- Calls for greatly improved observational capabilities

National Research Council First Report– Recommendations

- Clarify vision, goals, and priorities of the CCSP and CCRI
- Improve program management description
- Fill key information needs
- Enhance efforts to support decision making
- Create basis for implementation
- Create external review board



- Atmospheric distributions and effects of aerosols;
- Climate feedbacks and sensitivity, initially focusing on polar feedbacks; and
- Carbon sources and sinks, focusing particularly on North America.

In addition, CCSP will focus on efforts to:

- Document historical records
- Improve observations for model development and application
- Enhance biological and ecological observing systems
- Improve data archiving and information system architectures
- Create of more than 20 synthesis and assessment reports during the next four years

Goals for the U.S. Climate Change Science Program

- **CCSP Goal 1:** Improve knowledge of the Earth's past and present climate and environment, including their natural variability, and improve understanding of the causes of observed variability and change
- CCSP Goal 2: Improve quantification of the forces bringing about changes in the Earth's climate and related systems
- CCSP Goal 3: Reduce uncertainty in projections of how the Earth's climate and related systems may change in the future
- CCSP Goal 4: Understand the sensitivity and adaptability of different natural and managed ecosystems and human systems to climate and related global changes
- CCSP Goal 5: Explore the uses and identify the limits of evolving knowledge to manage risks and opportunities related to climate variability and change

CCSP Goal 1: Improve knowledge of the Earth's past and present climate and environment, including its natural variability, and improve understanding of the causes of observed variability and change

- Temperature trends in the lower atmosphere
- Past climate variability and change in the Arctic and at high latitudes
- Reanalyses of historical climate data for key atmospheric features

CCSP Goal 2: Improve quantification of the forces bringing about changes in the Earth's climate and related systems

- Updating scenarios of greenhouse gas emissions and concentrations, in collaboration with the CCTP
- North American carbon budget and implications for the global carbon cycle
- Aerosol properties and their impacts on climate
- Trends in emissions of ozone-depleting substances, ozone layer recovery, and implications for ultraviolet radiation exposure and climate change

CCSP Goal 3: Reduce uncertainty in projections of how the Earth's climate and related systems may change in the future

- Climate projections for research and assessment based on emissions scenarios developed through the CCTP
- Climate models and their uses and limitations, including sensitivity, feedbacks, and uncertainty analysis
- Climate extremes including documentation of current extremes. Prospects for improving projections
- Risks of abrupt changes in global climate

CCSP Goal 4: Understand the sensitivity and adaptability of different natural and managed ecosystems and human systems to climate and related global changes

- Coastal elevation and sensitivity to sea level rise
- State-of-knowledge of thresholds of change that could lead to sudden changes in some ecosystems and climate-sensitive resources
- Relationship between observed ecosystem changes and climate change
- Preliminary review of adaptation options for climate-sensitive ecosystems and resources
- Scenario-based analysis of the climatological, environmental, resource, technological, and economic implications of different atmospheric concentrations of greenhouse gases
- State-of-the-science of socioeconomic and environmental impacts of climate variability
- Within the transportation sector, a summary of climate change and variability sensitivities, potential impacts, and response options

CCSP Goal 5: Explore the uses and identify the limits of evolving knowledge to manage risks and opportunities related to climate variability and change

- Uses and limitations of observations, data, forecasts, and other projections in decision support for selected sectors and regions
- Best-practice approaches to characterize, communicate, and incorporate scientific uncertainty in decisionmaking
- Decision support experiments and evaluations using seasonal to interannual forecasts and observational data

Table of Contents for the CCSP Strategic Plan

Chapter 1. Introduction

Chapter 2. Integrating Climate and Global Change Research

Chapter 3. Atmospheric Composition

Chapter 4. Climate Variability and Change

Chapter 5. Water Cycle

Chapter 6. Land-Use/Land-Cover Change

Chapter 7. Carbon Cycle

Chapter 8. Ecosystems

Chapter 9. Human Contributions and Responses to Environmental Change

Chapter 10. Modeling Strategy

Chapter 11. Decision Support Resources Development

Chapter 12. Observing and Monitoring the Climate System

Chapter 13. Data Management and Information

Chapter 14. Communications

Chapter 15. International Research and Cooperation

Chapter 16. Program Management and Review

Annexes

A. Authors, Reviewers, and Workshop Participants

B. References

C. Graphics and Photography Source Information

D. Glossary

E. Acronyms, Abbreviations, and Units

Strategic Plan Roll Out

- Secretary Abraham and Secretary Evans will release the document
- 3 Documents to be released
 - Full Strategic Plan
 - Vision Document
 - Press Version of Strategic Plan
- Full Strategic Plan and Vision Document will be available at www.climatescience.gov upon release

Earth Observation Summit

- Hosted by the U.S. Government in Washington, DC, on July 31, 2003
- Senior international government and nongovernment leaders in climate science, technology and environment
- To obtain international support for a system of integrated space-borne, airborne, and in situ observations, to help understand and address global, environmental and economic concerns (www.earthobservationsummit.gov)